UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,673	02/01/2001	John Lillington	550-204	3519

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NIXON & VANDERHYE P.C.
8th Floor
1100 North Glebe Road.
Arlington, VA 22201-4714

EXAMINER
VARTANIAN, HARRY

ART UNIT	PAPER NUMBER
2634	6

DATE MAILED: 04/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/774,673	LILLINGTON, JOHN
	Examiner	**Art Unit**	
	Harry Vartanian	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
   Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>01 February 2001</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-16</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-3,5,8-12 and 14-16</u> is/are rejected.

7)☒ Claim(s) <u>4,6,7 and 13</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>01 February 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

Detailed Action

Specification

1.   Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. **The form and legal phraseology often used in patent claims, such as "means" and *"said,"* should be avoided**. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claim 1-3, 5, 8-9, 14, and 16 are rejected under 35 U.S.C. 102(b) as being

anticipated by Gockler(US Patent# 4,839,889). Regarding Claim 1, Gockler meets the

following limitation of the Claim:

> Apparatus for frequency content separating an input signal, said apparatus comprising: **(Column 1, lines 13-15)**
>
> (i) a plurality of frequency splitting stages, each stage including **(fig 8)**
>
> one or more up-converter and down-converter pairs, an up-converter and down-converter pair serving to receive a complex input signal representing an input bandwidth **(Column 4, Lines 56-68)**
>
> to output a first complex output signal representing an upper portion of said input bandwidth and **fig 4; abstract**
>
> a second complex output signal representing a lower portion of said input bandwidth, **fig 4; abstract**
>
> said first portion and said second portion being contiguous and together representing said input

bandwidth portion. **fig 4; abstract**

Moreover, regarding the last three limitations of the Claim, Gockler discloses the use of

high and low pass filter therefore using such filters would produce a lower complex signal

portion and a higher one. See Gocklers detailed text for the specific operation of the low

and high pass filters.

Regarding Claims 2-3, Gockler shows in figure 8 that the bandwidth of each signal is halved

as it passes each stage in the filter bank. In figure 4, the frequency division of each channel

is shown. Therefor, Gockler meets the limitation for going from an original input bandwidth

to bandwidths of ½ for each portion of the signal.

Regarding Claim 5, Gockler meets the following limitation of the Claim:

> wherein said first complex output signal and said second complex output signal each comprise a stream of
> digital sample values. **(Column 4, Lines 20-23); Claim 1**

Regarding Claim 8, Gockler meets the following limitation of the Claim:

> wherein one or more of said up-converters and said down-converters comprises a finite impulse response
> filter. (Column 4, Lines 10-55); **Note: A FFT can be implemented using a FIR filter**

Regarding Claim 9, Gockler meets the following limitation of the Claim:

> wherein one or more of said up-converters and said down-converters comprises a local oscillator
> generating a time varying coefficient signal by which sample signals are multiplied. **(Column 5, Lines 8-
> 20); (Column 1, Lines 34-54)**

Regarding Claim 14, Gockler meets the following limitation of the Claim:

> wherein said up-converter and said down-converter pairs are formed as a combined conversion unit with
> shared components. **fig 8**

Regarding Claim 16, the rejection for Claim 1 above also meets the limitations of this Claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or
> described as set forth in section 102 of this title, if the differences between the subject
> matter sought to be patented and the prior art are such that the subject matter as a
> whole would have been obvious at the time the invention was made to a person having
> ordinary skill in the art to which said subject matter pertains. Patentability shall not be
> negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under

35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating
       obviousness or nonobviousness.

3.   Claim 10-12 rejected under 35 U.S.C. 103(a) as being unpatentable over Gockler(US

Patent# 4,839,889). Gockler meets all the limitations of the Claims, except disclosing the

different variations of the filter coefficients that can be used in his digital filter bank.

However, Claims 10-12 are design choices since the selection of filter coefficients is

arbitrary.   There can be any number of DIFFERENT coefficient combinations to satisfy a

particular FIR frequency response. This was well known to those in the art at the time the

invention was made.

4.   Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gockler(US

Patent# 4,839,889) in view of Imai et al(US Patent 5,864,800). Gockler meets all the

limitations of the Claims except disclosing the use of a poly-phase filter in his conversion

unit.

However, Imai et al discloses "band splitting by a poly-phase filter bank."(see fig 9A and its description). Therefor it would have been prima facie obvious at the time the invention was made for Gockler et al to use poly-phase filters for his digital filter tree. The motivation to combine is that a poly-phase filter is one a plurality of filters, for instance quadrature mirror filter (QMF)or LPF, that can be used for "bandsplitting". *(See Imai et al Column 2, Lines 36-53)*

Allowable Subject Matter

5.   Claims 4, 6-7, 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Vartanian whose telephone number is 703.305.8698. The examiner can normally be reached on 9-5:30 Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703.305.4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

                                                                Harry Vartanian

Examiner
Art Unit 2634

HV

STEPHEN CHIN
SUPERVISORY PATENT EXAMINE
TECHNOLOGY CENTER 2600